fluctuation in DCM pts was higher than that in normal subjects (0.54 ± 0.15 vs. 0.30 ± 0.14, $p < 0.01$). The HF power (CCV) of RR fluctuation in DCM pts was lower than that in normal subjects (0.79 ± 0.41 vs. 1.83 ± 1.06, $p < 0.01$). There was no significant difference in the LF power of SAP fluctuation between the two groups. Serum norepinephrine level (ng/ml) in DCM pts was higher than that in normal subjects (0.35 ± 0.16 vs. 0.19 ± 0.10, $p < 0.05$). (2) Nine DCM pts who were treated with enalapril (5 mg/daily) showed improved LF power (0.60 ± 0.16 → 0.30 ± 0.10, $p < 0.01$) and HF power (0.72 ± 0.29 → 1.32 ± 0.54, $p < 0.05$) of RR fluctuation within one week. They also showed improved LF power (0.38 ± 0.22 → 0.22 ± 0.17, $p < 0.05$) of SAP fluctuation. However, there was no significant change in serum norepinephrine level within one week. *Conclusion:* In DCM patients, both the vasomotor and the cardiac sympathetic activity may be favorably altered by ACEI. These changes may play a part in improving clinical outcome in DCM patients.

11:45

703-6 Acute Effects of Ibopamine on Left Ventricular Mechanics in Patients With Idiopathic Dilated Cardiomyopathy

Giovanni Bellotti, Alvaro Moraes, Pedro Graziosi, Edimar Bocchi, Antonio Esteves, Caio Medeiros, Fernando Bacal, Giovanni Cerri, Fulvio Pileggi. *Heart Institute — University of Sao Paulo — Brazil*

The effects of ibopamine (IBO) on left ventricular (LV) mechanics and contractility have not been described. We studied 10 male patients (45 ± 7 yrs) with refractory heart failure due to idiopathic dilated cardiomyopathy. The patients were submitted to simultaneous Echo-Doppler and hemodynamic (tip catheter) studies, before (B) and after (20, 40 and 60 minutes) a single-dose of 200 mg of IBO. Pressure/diameter and stress/strain relations were obtained. Subsequently, heart rate (HR-bpm), cardiac output (CO-l/m), end-diastolic pressure (EDP-mmHg); fractional shortening (FS-%); maximal elastance (E_{max}-mmHg/cm); end systolic (ESS-g/cm^2) and end-diastolic (EDS-g/cm^2) stress; and chamber (Kp-mmHg/cm) and muscle (Km-g/cm^2) stiffness were analyzed:

	Before	20 min	40 min	60 min
HR	98.9 ± 7.2	100 ± 7.2	99 ± 8.3	99 ± 9.8
CO	4.13 ± 1.28	4.95 ± 1.38*	5.13 ± 1.96*	5.18 ± 1.57*
EDP	26.3 ± 4.2	30.6 ± 6.4*	24.6 ± 5.6*	22.3 ± 4.6*
FS	13.7 ± 2.4	15.4 ± 2.8*	15.9 ± 1.8*	16.1 ± 2.0*
E_{max}	14.8 ± 3.2	16 ± 3.6*	17.7 ± 4.2*	17.6 ± 4.2*
ESS	232.3 ± 67	228.1 ± 50.8	219 ± 42.9	207.8 ± 49.2
EDS	79.7 ± 22.8	91.7 ± 29.6*	79 ± 31	63 ± 17.3*
Kp	27.2 ± 12.6	60 ± 26.7*	27.9 ± 11.7	26.1 ± 11
Km	751 ± 337	829 ± 386	830 ± 420	845 ± 333

*$p < 0.05$

In conclusion, IBO shows a beneficial effect on LV systolic and diastolic function as well as on contractility in pts with heart failure due to dilated cardiomyopathies.

704 Congenital Heart Disease in the Adult

Monday, March 25, 1996, 10:30 a.m.–Noon
Orange County Convention Center, Room 414B

10:30

704-1 Risk and Predictors for Pregnancy-Related Complications in Women With Heart Disease

Samuel C. Siu, Mathew Sermer, David A. Harrison, Elizabeth Grigoriadis, Grace Liu, John C. Spears, Jack M. Colman. *University of Toronto, Toronto, Ontario, Canada*

The risk and predictors of cardiac (CV) and neonatal (NE) complications in pregnant women with heart disease have not been well defined. We reviewed the outcomes of 219 pregnancies in 153 women with heart disease (age = 29 ± 5 yrs) who delivered at The Toronto, Mount Sinai, & Women's College Hospitals from 1986 to 1992. Fifty six percent of pregnancies occurred in women with congenital CV lesions; the remainder occurred in those with acquired lesions or CV arrhythmias. CV (LV failure, arrhythmia, or stroke) and NE (prematurity, low birth weight, respiratory distress syndrome, or neonatal death) events were recorded. Multivariate logistic regression analysis was utilized to identify independent predictors of CV and NE events.

Results: Eighty four percent of pregnancies culminated in live births. The overall event rate was 29% (CV events only = 20%, NE events only = 15%, both CV and NE events = 6%). Independent predictors of CV events were baseline NYHA class > II ($p < 0.001$), dilated or hypertrophic cardiomyopathy ($p < 0.002$), left heart obstruction ($p < 0.001$), preexisting CV arrhythmias ($p < 0.001$). Use of anticoagulants during pregnancy was associated with NE events ($p < 0.004$).

Conclusions: Women with heart disease are at significant risk for either CV or NE events. The risk of adverse events can be predicted from baseline characteristics of the mother. Identification of predictors of CV and NE events will contribute to the risk stratification and clinical management of pregnant women with heart disease.

10:45

704-2 Pregnancy in Women With Coarctation of the Aorta

Heidi M. Connolly, Naser M. Ammash, Carole A. Warnes. *Mayo Clinic, Rochester, MN*

To define the outcome of pregnancy in patients (pts) with coarctation of the thoracic aorta (coarct), we reviewed data on 59 such pts ≥ 16 yrs old seen at the Mayo Clinic from 1980–1994. Fifteen pts had not attempted pregnancy, 5 pts were advised against pregnancy due to coarct and no pts reported infertility. Thirty-nine pts had 87 pregnancies resulting in 81 (93%) live births (1 twin pregnancy, 1 still pregnant). Miscarriages occurred in 6/87 (7%) of pregnancies, there was one early neonatal death. Of deliveries, 54/81 (67%) were vaginal and 27/81 (33%) were by cesarean section. No pregnancies were terminated. Fifteen pts had 33 successful (1 neonatal death) and 4 spontaneously unsuccessful pregnancies before coarct surgery. Twenty-two pts had 41 successful and 2 unsuccessful pregnancies after coarct surgery (1 twin pregnancy, 1 still pregnant). Two pts each had 1 pregnancy before and a total of three after coarct surgery. There were no pregnancy-related maternal deaths. Eleven pts were on antihypertensive therapy prior to pregnancy. Nine pts had hypertension (HTN) during pregnancy (5 unoperated, 4 operated [2 required reoperation]). Of 9 pts with HTN during pregnancy, only 2 were on prepregnancy beta blocker therapy. There were 3 premature deliveries (2 operated, 1 unoperated). Three offspring had CHD; a Noonan's mother had a Noonan's infant with pulmonary stenosis, a Down syndrome infant had an AV canal, and 1 had a VSD (closed spontaneously). Birth weights (BW) were available for 79/81 (97%) of offspring; overall mean BW 3.4 ± 0.6 kg. The mean BW of offspring born to pts prior to coarctation surgery was 3.3 ± 0.6 vs 3.4 ± 0.5 after surgery (p = NS).

Conclusion: Contrary to prior reports, the maternal and fetal outcome of pregnancy in pts with coarct is encouraging. There is however an increased incidence of pregnancy-related HTN, particularly among unoperated pts. Prepregnancy evaluation should include assessment of functional class, blood pressure and the presence of coexistent cardiac disease.

11:00

704-3 The Fontan Procedure in Adults ≥ 15 Years: Operative and Late Results

Sonya M. Vaziri, John E. Mayer, Janice T. Burnett, Susan M. Fernandes, Laurence J. Sloss, Michael J. Landzberg. *Boston Adult Congenital Heart Service, Brigham and Women's and Children's Hospitals, Boston MA*

Optimal management strategies for adults with single ventricle (SV) physiology remain undefined. We therefore reviewed our experience in pts ≥ 15 yrs who underwent the Fontan procedure at Children's Hospital from 1973–present.

Results: Among the initial 500 pts who underwent the Fontan procedure from 1973–1991, 61 were ≥ 15 (range 15–36) yrs; preoperative diagnoses included tricuspid atresia (18), single ventricle (38), heterotaxy (3) and pulmonary atresia (2); 45% were women. Follow-up ranged from 2–21 yrs.

Mortality	Age ≥ 15 yr (n = 61) Deaths (%)	Age > 4 yr < 15 yr (n = 244) Deaths (%)
Early (< 30 days postop)	5 (8.2%)	30 (12.3%)
Late	5 (8.9%)	15 (7.0%)
Total	10 (16.4%)	45 (18.4%)

Since 1991 an additional 18 pts (15–40 yrs) underwent the Fontan procedure with no late mortality; 1 pt died in the perioperative period. Preoperative PA pressure ≥ 15, LVED > 12, PVR > 4 wu or heterotaxy syndrome, present in 32%, did not appear to correlate with long term survival. Among survivors, 2 pts had cardiac transplantation for resistant low output. Of the remaining pts, at latest follow-up, 97% were NYHA class I or II; 4 women have had 5 successful pregnancies. Documented CNS emboli occurred in 3 pts (4%). Antiarrhythmic medications or pacemaker implantation was required in 29%.

Conclusion: In our experience, the Fontan procedure offers adults with SV physiology 1) low mortality, similar to younger comparison groups, and 2) good long term functional outcome, despite increasing risk factor profiles in this population. The long term effects of additional medical therapies have yet to be determined.